AMENDMENT UNDER 37 C.F.R. § 1.111 Attorney Docket No.: Q94159

Application No.: 10/574,688

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1. (currently amended): A producing method for producing aminopyrrolidine derivatives of

formula (I), or salts thereof, comprising reaction steps 1 and 2, wherein the indole derivative in

reaction step 1 is not substituted at the 3-position in the presence of a synthon of formaldehyde

represented by the following reaction formula (I) and wherein with the proviso that reaction step

2 is unnecessary if both R¹ and R² are hydrogen-:

$$R^{25}$$
 R^{24}
 R^{23}
 R^{23}
 R^{24}

reaction step
$$1 \pm \frac{1}{1}$$
 indole derivative

 R^{16}
 R^{15}
 R^{17}
 R^{14}
 R^{14}
 R^{11}
 R^{12}
 R^{12}
 R^{14}
 R^{26}
 R^{26}
 R^{24}
 R^{23}

reaction step 2

$$R^{16}$$
 R^{15}
 R^{17}
 R^{14}
 R^{11}
 R^{12}
 R^{14}
 R^{14}
 R^{26}
 R^{25}
 R^{24}
 R^{23}
 R^{23}
 R^{23}
 R^{24}
 R^{23}
 R^{24}
 R^{25}
 R^{25}

wherein

 R^1 and R^2 represent independently hydrogen or a protecting group for amino group (wherein R^1 and R^2 may, taken together, form a cyclic structure);

R³ represents hydrogen or C₁–C₆ alkyl;

R¹¹ represents hydrogen, C₁–C₆ alkyl or C₂–C₇ alkanoyl;

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R¹², R¹⁴, R¹⁵, R¹⁶ and R¹⁷ represent independently hydrogen, halogen, optionally

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halogenated C₁–C₆ alkyl, optionally halogenated C₁–C₆ alkoxy, hydroxyl or C₂–C₇

alkoxycarbonyl; and

R²³, R²⁴, R²⁵ and R²⁶ represent independently hydrogen, halogen, optionally halogenated

 C_1-C_6 alkyl, optionally halogenated C_1-C_6 alkoxy or hydroxyl; and

wherein the synthon of formaldehyde is at least one selected from the group consisting of

formalin, paraformaldehyde and trioxane.

2. (original): The production method according to claim 1, wherein the protecting group for

amino group as R¹ or R² is methoxycarbonyl, t-butoxycarbonyl, benzyloxycarbonyl,

allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl,

wherein, when said protecting group for amino group contains an aromatic ring, the aromatic

ring may be optionally substituted with one or more of nitro, amino, C₁–C₆ alkyl, C₁–C₆ alkoxy

or halogen.

3. (original): The production method according to claim 1, wherein either of R¹ and R² is

hydrogen and the other is *t*-butoxycarbonyl.

4. (canceled).

5. (canceled).

6. (canceled).

7. (previously presented): The production method according to claim 1, wherein reaction step 2 is removal of the protection group for the amino group by acid hydrolysis.

- 8. (previously presented): The production method according to claim 1, wherein reaction step 2 involves treatment with hydrogen chloride in organic solvent.
- 9. (currently amended): A method for producing aminopyrrolidine derivatives or salts thereof, comprising a condensation step represented by the following reaction formula (II), wherein the condensation step is performed by treatment with an anthranilic acid derivative in an $\underline{\text{mixed}}$ solvent of aprotic solvent and $\underline{\text{C}}_{1-3}$ alcohol solvent in the presence of a condensing agent:

$$R^{16}$$
 R^{15}
 R^{14}
 R^{14}
 R^{11}
 R^{12}
 R^{14}
 R^{15}
 R^{15}
 R^{17}
 R^{14}
 R^{15}
 R^{17}
 R^{14}
 R^{15}
 R^{15}
 R^{15}
 R^{14}
 R^{14}
 R^{15}
 R^{15}
 R^{15}
 R^{15}
 R^{14}
 R^{14}
 R^{15}
 R

wherein

R³ represents hydrogen or C₁–C₆ alkyl;

 R^{11} represents hydrogen, C_1-C_6 alkyl or C_2-C_7 alkanoyl;

 R^{12} , R^{14} , R^{15} , R^{16} and R^{17} represent independently hydrogen, halogen, optionally halogenated C_1 – C_6 alkyl, optionally halogenated C_1 – C_6 alkoxy, hydroxyl or C_2 – C_7 alkoxycarbonyl; and

 R^{23} , R^{24} , R^{25} and R^{26} represent independently hydrogen, halogen, optionally halogenated C_1 – C_6 alkyl, optionally halogenated C_1 – C_6 alkoxy or hydroxyl.

10. (original): The production method according to claim 9, wherein the condensing agent is one or more of a compound selected from 1,3-dicyclohexylcarbodiimide, isobutyl chloroformate, pivaloyl chloride, isovaleryl chloride, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, 1-cyclohexyl-3-morpholinoethylcarbodiimide,

1-cyclohexyl-3-(4-diethylaminocyclohexyl)carboximide, *N*,*N*'-carbonyldiimidazole and 2-chloro-1,3-dimethylimidazolinium chloride.

11. (original): The production method according to claim 9, wherein the condensing agent is 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride.

12. (previously presented): The production method according to claim 9, wherein, in said condensation step, are additionally used one or more of an additive selected from *p*-nitrophenol, hydroxysuccinimide, hydroxyphthalimide, 1-hydroxy-1,2,3-benzotriazole, 3-hydroxy-4-oxo-3,4-

dihydro-1,2,3-benzotriazine, N-hydroxy-5-norbornene-2,3-dicarboximide and ethyl 2hydroxyimino-2-cyanoacetate.

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- 13. (previously presented): The production method according to claim 9, wherein, in said condensation step, 1-hydroxy-1,2,3-benzotriazole is additionally used as an additive.
- 14. (previously presented): The production method according to claim 9, wherein, in said condensation step, triethylamine is additionally used.
- 15. (previously presented): The production method according to claim 9, which further comprises a deprotection step represented by the following reaction step 4:

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$$R^{16}$$
 R^{15}
 R^{17}
 R^{14}
 R^{11}
 R^{12}
 R^{14}
 R^{14}
 R^{15}
 R^{16}
 R^{15}
 R^{16}
 R^{15}
 R^{16}

reaction step 4

$$R^{16}$$
 R^{15}
 R^{17}
 R^{14}
 R^{11}
 R^{12}
 R^{12}
 R^{14}
 R^{14}
 R^{14}
 R^{15}
 R^{15}
 R^{14}
 R^{14}
 R^{15}
 R^{15}

reaction step 5 + HO \mathbb{R}^{16} \mathbb{R}^{15} \mathbb{R}^{17} \mathbb{R}^{14} \mathbb{R}^{26} \mathbb{R}^{26} \mathbb{R}^{24}

wherein R³, R¹¹, R¹², R¹⁴, R¹⁵, R¹⁶, R¹⁷, R²³, R²⁴, R²⁵ and R²⁶ are as defined in reaction formula (II); R⁵ and R⁶ represent independently hydrogen or a protecting group for amino group (wherein R⁵ and R⁶ may, taken together, form a cyclic structure) except for the case where R⁵ and R⁶ are simultaneously hydrogen.

16. (original): The production method according to claim 15, wherein said reaction step 4 involves treatment with hydrogen chloride in organic solvent.

17. (previously presented): The production method according to claim 15, which further comprises an introduction step of an indole derivative represented by the following reaction step 3:

reaction step 3

$$\begin{array}{c}
R_{17}^{16} \\
R_{17}^{17} \\
R_{11}^{17} \\
R_{12}^{17} \\
R_{14}^{17} \\
R_{14}^{17} \\
R_{15}^{17} \\
R_{14}^{17} \\
R_{17}^{17} \\
R_{17}^{17} \\
R_{17}^{17} \\
R_{17}^{17} \\
R_{17}^{17} \\
R_{14}^{17} \\
R_{15}^{17} \\
R_{14}^{17} \\
R_{17}^{17} \\
R_{14}^{17} \\
R_{17}^{17} \\
R_{14}^{17} \\
R_{17}^{17} \\
R_{17$$

wherein R³, R⁵, R⁶, R¹¹, R¹², R¹⁴, R¹⁵, R¹⁶, R¹⁷, R²³, R²⁴, R²⁵ and R²⁶ are as defined above.

18. (currently amended): The production method according to claim 17, wherein said reaction step 3 is reaction of an indole derivative having no substituent at the 3-position in the presence of a synthon of formaldehyde selected from the group consisting of formalin, paraformaldehyde and trioxane.

- 19. (original): The production method according to claim 18, wherein the synthon of formaldehyde is formalin.
- 20. (original): The production method according to claim 17, wherein said reaction step 3 is reaction of an indole derivative substituted with a dialkylaminomethyl group at the 3-position.
- 21. (previously presented): The production method according to claim 17, which further comprises a removal step of a benzyl group represented by the following reaction step 2:

wherein R^3 , R^5 , R^6 , R^{11} , R^{12} , R^{14} , R^{15} , R^{16} , R^{17} , R^{23} , R^{24} , R^{25} and R^{26} are as defined above.

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22. (original): The production method according to claim 21, wherein, in said reaction step 2, a

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hydrogen source is used in the presence of palladium catalyst.

23. (original): The production method according to claim 22, wherein the hydrogen source is

gaseous hydrogen.

24. (currently amended): The production method according to claim 21, which further comprises

a condensation step with an amino acid derivative represented by the following reaction step 1:

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$$\begin{array}{c|c} & & & \\ &$$

reaction step 3 <u>+ an indole</u> derivative

$$R^{16}$$
 R^{15}
 R^{17}
 R^{14}
 R^{11}
 R^{12}
 R^{14}
 R^{14}
 R^{15}
 R^{16}
 R^{15}
 R^{16}
 R^{16}

reaction step 4

wherein R^3 , R^5 , R^6 , R^{11} , R^{12} , R^{14} , R^{15} , R^{16} , R^{17} , R^{23} , R^{24} , R^{25} and R^{26} are as defined above.

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chloroformate, pivaloyl chloride, isovaleryl chloride,

25. (original): The production method according to claim 24, wherein, in said reaction step 1, are used one or more of a condensing agent selected from 1,3-dicyclohexylcarbodiimide, isobutyl

1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, 1-cyclohexyl-3-morpholinoethylcarbodiimide, 1-cyclohexyl-3-(4-diethylaminocyclohexyl)carboximide, *N*,*N*'-carbonyldiimidazole and 2-chloro-1,3-dimethylimidazolinium chloride.

26. (original): The production method according to claim 24, wherein, in said reaction step 1, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide is used as a condensing agent.

27. (previously presented): The production method according to claim 24, wherein, in said reaction step 1, are additionally used one or more of an additive selected from *p*-nitrophenol, hydroxysuccinimide, hydroxyphthalimide, 1-hydroxy-1,2,3-benzotriazole, 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine, *N*-hydroxy-5-norbornene-2,3-dicarboximide and ethyl 2-hydroxyimino-2-cyanoacetate.

28. (previously presented): The production method according to claim 24, wherein, in said reaction step 1, 1-hydroxy-1,2,3-benzotriazole is additionally used as an additive.

29. (previously presented): The production method according to claim 24, wherein, in said reaction step 1, triethylamine is additionally used.

- 30. (previously presented): The production method according to claim 15, wherein the protecting group for amino group as R⁵ and R⁶ is methoxycarbonyl, t-butoxycarbonyl, benzyloxycarbonyl. allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for the amino group contains an aromatic ring, the aromatic ring may be optionally substituted with one or more of nitro, amino, $C_1 - C_6$ alkyl, $C_1 - C_6$ alkoxy or halogen.
- 31. (previously presented): The production method according to claim 15, wherein either of R⁵ and R⁶ is hydrogen and the other is *t*-butoxycarbonyl.
- 32. (previously presented): The production method according to claim 1, wherein R³ is hydrogen.
- 33. (previously presented): The production method according to claim 1, wherein R¹¹, R¹², R¹⁴, R¹⁵ and R¹⁷ are all hydrogen.
- 34. (previously presented): The production method according to claim 1, wherein R¹⁶ is methyl.
- 35. (previously presented): The production method according to claim 1, wherein R²³, R²⁴ and R²⁶ are all hydrogen.
- 36. (previously presented): The production method according to claim 1, wherein R²⁵ is trifluoromethoxy.

37. (currently amended): A compound or a salt thereof represented by the following formula (III):

$$R^{4}O$$
 R^{3}
 R^{26}
 R^{25}
 R^{24}
 R^{23}
 R^{23}
 R^{23}
 R^{23}
 R^{23}
 R^{24}

wherein

R¹ is hydrogen and R² represent independently hydrogen oris a protecting group for an amino group, or R¹ is a protecting group for an amino group and R² is hydrogen for amino group (wherein R¹ and R² may, taken together, form a cyclic structure);

 R^3 represents hydrogen or C_1 – C_6 alkyl;

R⁴ represents hydrogen or C₁–C₆ alkyl; and

 R^{23} , R^{24} , R^{25} and R^{26} represent independently hydrogen, halogen, optionally halogenated C_1 – C_6 alkyl, optionally halogenated C_1 – C_6 alkoxy or hydroxyl.

38. (original): The compound or a salt thereof according to claim 37, wherein said protecting group of amino group as R^1 and R^2 is methoxycarbonyl, t-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for the amino group contains an aromatic ring, the aromatic ring may be substituted with one or more of nitro, amino, C_1 – C_6 alkyl, C_1 – C_6 alkoxy or halogen.

39. (original): The compound or a salt thereof according to claim 37, wherein either of R^1 and R^2 is hydrogen and the other is hydrogen, *t*-butoxycarbonyl or benzyloxycarbonyl.

40. (previously presented): The compound or a salt thereof according to claim 37, wherein R³ is hydrogen.

- 41. (previously presented): The compound or a salt thereof according to claim 37, wherein R⁴ is hydrogen.
- 42. (previously presented): The compound or a salt thereof according to claim 37, wherein R²³, R²⁴ and R²⁶ are all hydrogen.
- 43. (previously presented): The compound or a salt thereof according to claim 37, wherein R²⁵ is C₁–C₆ alkoxy substituted with halogen.
- 44. (previously presented): The compound or a salt thereof according to claim 37, wherein R²⁵ is trifluoromethoxy.
- 45. (currently amended): A production method for producing of an anthranilamide derivative of formula (IV), or a salt thereof, comprising a the following reaction step represented by the following formula (IV):

$$R^{26}$$
 R^{24}
 R^{23}
 R^{23}
 R^{25}
 R^{24}
 R^{23}
 R^{25}
 R^{25}
 R^{25}
 R^{25}
 R^{25}
 R^{25}
 R^{24}
 R^{25}
 R^{25}
 R^{24}
 R^{25}
 R^{25}
 R^{24}
 R^{25}
 R^{25}

wherein:

R¹ and R² represent independently hydrogen or a protecting group for amino group (wherein R¹ and R² may, taken together, form a cyclic structure);

R³ represents hydrogen or C₁–C₆ alkyl;

R⁴ represents hydrogen or C₁–C₆ alkyl;

 R^{23} , R^{24} , R^{25} and R^{26} represent independently hydrogen, halogen, optionally halogenated C_1 – C_6 alkyl, optionally halogenated C_1 – C_6 alkoxy or hydroxyl.

46. (original): The production method according to claim 45 which further comprises a reaction step represented by the first step in the following reaction formula:

$$R^{26}$$
 R^{24}
 R^{23}
 R^{26}
 R^{25}
 R^{24}
 R^{25}
 R^{24}
 R^{25}
 R^{24}
 R^{23}
 R^{25}
 R^{24}
 R^{23}
 R^{25}
 R^{25}
 R^{24}
 R^{25}
 R^{25}
 R^{25}
 R^{24}

wherein R¹, R², R³, R⁴, R²³, R²⁴, R²⁵ and R²⁶ are as defined above.

47. (previously presented): The production method according to claim 45, wherein the protecting group for amino group as R^1 or R^2 is methoxycarbonyl, t-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for the amino group contains

- an aromatic ring, the aromatic ring may be substituted with one or more of nitro, amino, C₁-C₆ alkyl, C₁–C₆ alkoxy or halogen.
- 48. (previously presented): The production method according to claim 45, wherein either of R¹ and R² is hydrogen and the other is hydrogen, t-butoxycarbonyl or benzyloxycarbonyl.
- 49. (previously presented): The production method according to claim 45, wherein R³ is hydrogen.
- 50. (previously presented): The production method according to claim 45, wherein R²³, R²⁴ and R²⁶ are all hydrogen.
- 51. (previously presented): The production method according to claim 45, wherein R^{25} is C_1-C_6 alkoxy substituted with halogen.
- 52. (previously presented): The production method according to claim 45, wherein R²⁵ is trifluoromethoxy.
- 53. (new): A method for producing aminopyrrolidine derivatives of formula (I), or salts thereof, comprising reaction steps 1 and 2, wherein the indole derivative in reaction step 1 has a dialkylaminomethyl group at the 3-position and wherein reaction step 2 is unnecessary if both R¹ and R² are hydrogen:

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reaction step
$$1 + \frac{1}{100}$$
 indole derivative

R¹⁶
R¹⁵
R¹⁷
R¹⁴
R²⁶
R²⁶
R²⁶
R²⁷
R²⁸
R²⁸
R²⁸
R²⁸
R²⁹
R²⁹
R²⁰
R²⁰
R²⁰
R²⁰
R²¹

reaction step 2

$$R^{16}$$
 R^{15}
 R^{17}
 R^{14}
 R^{11}
 R^{12}
 R^{14}
 R^{14}
 R^{26}
 R^{25}
 R^{24}
 R^{23}

wherein

 R^1 and R^2 represent independently hydrogen or a protecting group for amino group (wherein R^1 and R^2 may, taken together, form a cyclic structure);

R³ represents hydrogen or C₁–C₆ alkyl;

R¹¹ represents hydrogen, C₁–C₆ alkyl or C₂–C₇ alkanoyl;

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R¹², R¹⁴, R¹⁵, R¹⁶ and R¹⁷ represent independently hydrogen, halogen, optionally

halogenated C₁–C₆ alkyl, optionally halogenated C₁–C₆ alkoxy, hydroxyl or C₂–C₇

alkoxycarbonyl; and

R²³, R²⁴, R²⁵ and R²⁶ represent independently hydrogen, halogen, optionally halogenated

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 C_1 – C_6 alkyl, optionally halogenated C_1 – C_6 alkoxy or hydroxyl.

54. (new): The production method according to claim 53, wherein the protecting group for amino

group as R^1 or R^2 is methoxycarbonyl, t-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl,

formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said

protecting group for amino group contains an aromatic ring, the aromatic ring may be optionally

substituted with one or more of nitro, amino, C₁–C₆ alkyl, C₁–C₆ alkoxy or halogen.

55. (new): The production method according to claim 53, wherein either of R^1 and R^2 is

hydrogen and the other is *t*-butoxycarbonyl.

56. (new): The production method according to claim 53, wherein reaction step 2 is removal of

the protection group for the amino group by acid hydrolysis.

57. (new): The production method according to claim 53, wherein reaction step 2 involves

treatment with hydrogen chloride in organic solvent.